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Communicating About a Nuclear Detonation

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Overview

The fear and confusion following a nuclear detonation can lead people to take action that may inadvertently put them in harm's way. Lack of understanding of radiation, its effects, and how it is measured can enhance the short- and long-term anxiety. Communicating a clear and effective message is a challenge, yet it is critical for reducing panic and saving lives. Response requires pre-scripted messages, expert spokespersons, credible experts, and rapid restoration of an effective communications infrastructure.

One challenge after a detonation will be making sure the communication infrastructure remains sound after the incident. Officials must ensure there alternate avenues of communication are in place in case there is significant damage to the infrastructure. Planners must consider the allocation of resources to supply information to these outlets and which outlets to use to gather situational awareness information.

Background

After a nuclear detonation, public safety depends on the ability to quickly communicate appropriate safety measures. Empowering people with information to protect themselves and their families can save thousands of lives. People will be affected in different ways and will have different information needs depending on their proximity to the blast and fallout plume. (Details in Chapter 3, Figure 2).

Blast Damage and Dangerous Fallout (DF) Zones: People in these areas need life-saving information. Anyone who might be in the path of the radioactive plume must quickly get inside and stay inside to avoid a potentially fatal dose of radiation.

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Surrounding Area: People in this area will be concerned for their immediate health and safety and will want to know what they should do. The surrounding area will also be faced with concerns about contaminated people and vehicles entering their communities. These communities will also serve as reception communities for evacuees.

National and International Communities: People in other parts of the nation and across the world will be seeking information and trying to get in touch with loved ones who may be in affected areas. There will be concern about a second attack. This is an opportunity to provide situation and response updates, educate the population about appropriate safety measures, and address concerns about the perceived health and other risks of those outside the affected areas.

Key goals of health officials and clinicians will be to remove contamination and control its spread, thereby preventing internal contamination and the need to use stockpile pharmaceuticals, and minimizing medically unnecessary self-referrals to hospitals and other critical facilities. Effective communications will drive accomplishment of these goals.

Messaging About Protective Actions And Radiation

Messages prepared, tested, and practiced in advance are fundamental to conveying clear, consistent information and instructions during an emergency. Many of the questions the public will have after a nuclear detonation can be anticipated and answered in advance.

When anticipating questions, planners must keep in mind both the broad audiences (listed above) as well as audiences with special communication needs (e.g., non-English speakers, hospital and nursing home staff and patients, the homeless population, etc.). To some extent, each audience will have specialized information needs, and messages should be able to be tailored to meet those needs.

In a nuclear incident, people will be primarily concerned with protecting themselves and their families. Protective action messages should provide simple, direct instruction to people in the affected areas about how to do this.

Audience research provides the following recommendations for messages:

Immediate Lifesaving Message

- A nuclear explosion has occurred at [Location] here in [City].
- You can survive a nuclear explosion if you take the right actions.
- Quickly Get Inside, Stay Inside and Stay Tuned.
 - **Quickly Get Inside**
 - Go inside the nearest building. (Preferably brick or concrete, but any building is better than being outside).
 - Go to a basement or the middle the building. You want to stay as far away from the outside of the buildings as possible.
 - If you are in a car, find a building immediately. Cars do not provide good protection from radiation but are better than no shelter
 - **Stay Inside**
 - Stay where you are.
 - The radiation outside may be fatal.
 - Remember, your friends and family have been instructed to stay inside too.
 - Staying inside, where you are, is best for everyone.
 - Plan to stay inside for at least 12 to 24 hours or until you are instructed to do otherwise. Radiation levels are extremely dangerous after a nuclear explosion, but the levels drop rapidly.
 - Staying inside can save your life.
 - **Stay Tuned**
 - Instructions will be updated as we gather more information.
 - Unless instructed otherwise, stay inside.

- Write short, concise, and simple messages.
- Use directive and authoritative language.
- Provide prioritized instructions and directions in each message.
- Provide information for a variety of environments.
- Create a message to encourage people not to leave their homes to check on loved ones in schools, daycares, and elder-care facilities.
- Avoid or define unknown terms and phrases.¹

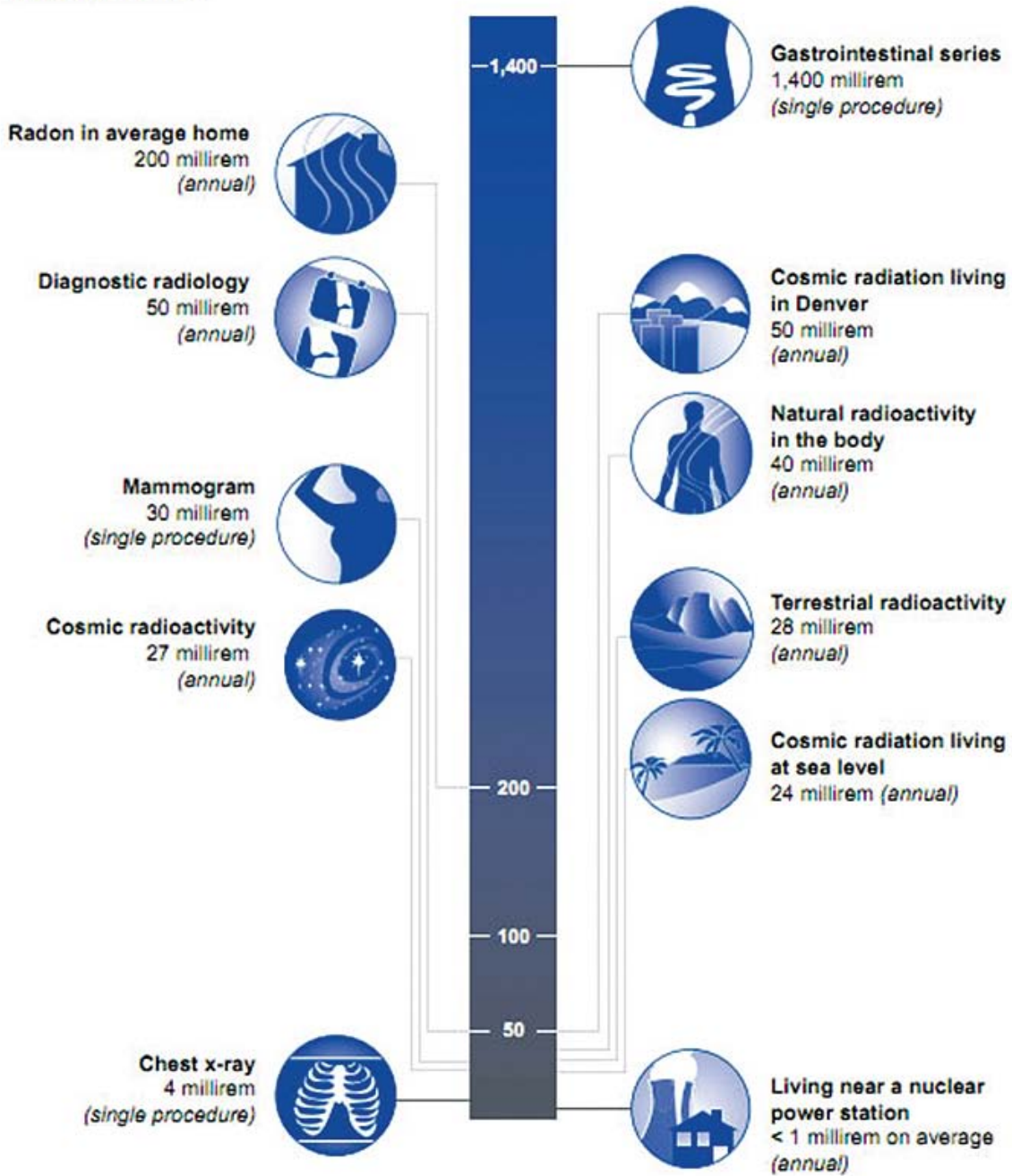
To help people understand information about the radiation threat, it is important to put the levels being detected in the context of the radiation we live with every day. Recent experience with the U.S. response to the Japanese nuclear plant emergency highlighted the public's desire for information about "how much" radiation they might be exposed to and how that compared with other radiation exposures. Figure 1 is a useful illustration for helping to accomplish this task

Figure 1. Relative Doses from Radiation Sources

Source: U.S. Environmental Protection Agency

RELATIVE DOSES FROM RADIATION SOURCES

Millirem Doses



Notes of caution:

- Some individuals may find the comparisons to other radiation exposures to be minimizing their concerns.

- Expert spokespersons should be available to discuss radiation and risk at a sophisticated level and be able to explain and/or counter partial or incorrect information that may be in the media.

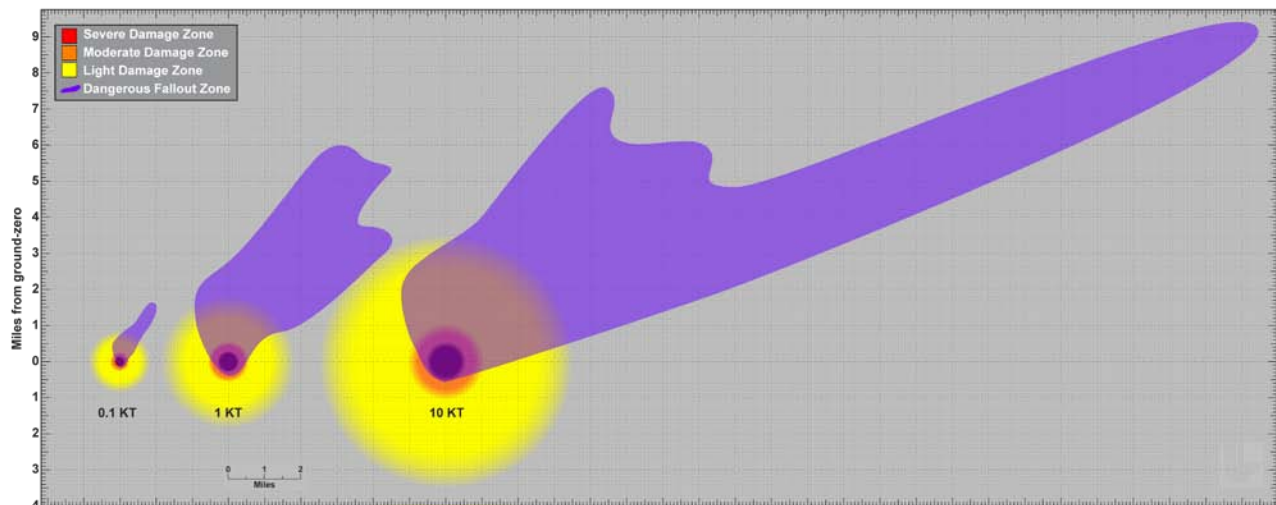
Communications Infrastructure

A key concern following a nuclear detonation incident will be the integrity of the communications infrastructure. How will officials communicate messages to affected audiences? The difficulty that will inevitably follow a nuclear detonation drives home the importance of pre-event preparedness. Officials anticipate the following infrastructure issues.²

Blast Damage Area: In the physically damaged areas (see Figure 2) there will be minimal, if any, ability to send or receive communications. All communications capabilities will be destroyed or severely hindered from the blast damage to the communications systems. Electrical, phone, and cellular systems will be down, and an electromagnetic pulse (EMP) will devastate electronics in the physically damaged area and possibly beyond. Televisions, computers, cell phones, and personal digital assistants (PDAs), such as BlackBerry devices, may also be impacted. Phones or PDAs that do withstand the EMP impact will likely be in the hands of survivors, because the person possessing it is sufficiently sheltered underground. However, this deep shelter could render the cell phone or PDA useless until a survivor finds a way to the surface, which could subject him or her to life-threatening radiation exposure. It may be days before communications capabilities are reestablished.

Figure 2. Nuclear Detonation Impact Zone and Action Area

After a nuclear detonation, people in the blast damage zones will have limited or no communications abilities. *However, the majority of treatable injuries will be in the zones that will likely have intact infrastructure including light damage zone and dangerous fallout zones.*



Source: *Planning Guidance for Response to a Nuclear Detonation*²

Along with commercial systems, public safety systems in this area (e.g., land and mobile radio and 911 call centers) may also suffer communications failures. Although these systems are typically more robust and less susceptible to failure than their commercial counterparts, they will be severely damaged or degraded in the blast and surrounding areas. These systems are critical to emergency responders for life-saving and rescue operations and must be restored as quickly as possible.

As part of the federal response to a major disaster, the Federal Emergency Management Agency (FEMA) will activate the Communications Annex of the National Response Framework, Emergency Support Function #2, to coordinate with the private sector, state, and local entities in restoring the commercial communications infrastructure and public safety and emergency responder networks.³ Industry continually monitors its own networks for outages and reduced capabilities and will usually begin recovery operations relatively quickly. Commercial providers typically have transportable restoration capabilities (e.g., cellular on wheels and cellular on light truck) strategically located around the country to minimize response times. With proper planning and preparedness, public safety and emergency responder networks can be augmented and/or temporarily restored through assets that the state, National Guard, and surrounding localities may be able to provide. As part of the federal response, FEMA can typically have communications assets on the ground in the contiguous 48 states within 24-48 hours after an incident.

Surrounding Area: The surrounding area may include surrounding communities, counties, bordering states, and people in the path of the radioactive plume, including the dangerous fallout zone. After a nuclear detonation, there is the potential for cascading effects along transmission lines in this area caused by EMP, which may extend hundreds of miles from the detonation site. This could mean electrical, phone, and Internet outages. *The EMP should have limited, if any, effect on electronic devices in the surrounding area and DF zone outside of the blast damage zone. Electronic devices may only require resetting switches and circuit breakers.* Reception communities may not have significant infrastructure issues, but connectivity will be essential for them to adequately prepare for receiving potentially thousands of evacuees.

National and International Communities: In any major national emergency, a sudden increase in the need for information and human connectivity can severely stress and sometimes exceed the capacity of the communications infrastructure. This will hinder the ability to communicate into or out of the physically damaged areas, the regional DF zone, and possibly the surrounding vicinity. Planners must know what types of systems are available to enable responder communications in case normal communications methods are unavailable.

Communication Channels

In a nuclear denotation, every available information outlet must be used to gather information about the health and safety issues the community and responders face; to provide guidance to affected populations; and to address health, economic, safety and other concerns of people across the country and throughout the world. **Information outlets include electronic**

billboards, 911 systems, short-wave radio, siren warning systems, radio, television, newspapers, flyers, public announcement (PA) systems, text messages, and social media and other websites. Planners must consider the allocation of resources to supply information to these outlets and which outlets to use to gather situational awareness information.

Radio broadcasts may be the most effective means to reach people closest to the nuclear explosion. Emergency Alert System, National Oceanic and Atmospheric Administration (NOAA) weather radio broadcasts, reverse 911 systems, flyers, PA systems, short-wave radio, and siren warning systems may be useful in rapid dissemination of emergency information in the affected area. Although additional outlets, particularly electronic outlets, are more likely to be useful away from the blast site, these outlets should be considered in emergency communications plans.

A 2011 Pew Research Center report found that 84 percent of adults in the United States own a cell phone, a relatively stable number since mid-2008.⁴ Among this population, 56 percent reported receiving local news and information on their mobile devices. This equates to nearly half of all American adults (47 percent). Approximately 70 percent send text messages daily—an average ten messages per day.⁵ Recognizing this trend, the U.S. government is currently building a library of public health text messages that can be used during disasters by local responders and health departments and the entities with the capacity to send emergency text messages to people in the affected area.

Table 1. Social Media Usage (2010). Social media usage is also increasing for all ages groups, although people ages 18-29 continue to be the largest group of social media users.⁶

Age	Percent Using Social Media
19-29	86% (up from 16% in 2001)
30-49	61%
50-64	47%
Over 65	26%

These figures suggest that disaster communications plans should include use of social networks in disaster response. In addition to serving as information outlets, these internet sites also provide responders with situational awareness during the disaster response and recovery.

Planners should also enlist community and national organization partners, including faith-based organizations, to support communications efforts in a nuclear emergency response. Given the magnitude of the communication task in such a response, partners can serve as force multipliers—providing information between organization members and emergency response agencies. Most people look for confirmation from five sources before evacuating an area,⁷ and trusted partners can provide this confirmation, encouraging evacuation as well as compliance with other health and safety actions.

Table 2. Communication Channels by Target Audience

**All of these communication channels can and should be approached with partners who can amplify the message and serve as force-multipliers for emergency responders.*

Public Information Target Audience	Suggested Communication Channels*
Blast Damage Zone	Radio Short-wave radio NOAA weather radio Public announcement (PA) systems Flyers Siren warning systems NOAA weather radio Door-to-door Monitor social media for situational awareness
Dangerous Fallout Zone	Radio Short-wave radio NOAA weather radio Regular radio Public announcement (PA) systems Siren warning systems Electronic billboards Flyers 911 systems Monitor social media for situational awareness
Surrounding Area	Radio Television Newspapers Text messaging systems Electronic and hard-copy billboards Social media Websites Flyers
National and International Communities	Social media Television Newspapers Magazines Websites

Challenges to Preparedness and Opportunities for Planning

Given the critical need to communicate rapidly and effectively following an improvised nuclear device (IND) incident, pre-event planning is essential. However, significant challenges exist. In a Gallup panel (Figure 3) including more than 25,000 individuals from across the country, 61 percent of people believed an improvised explosive device would be used in an attack on U.S.

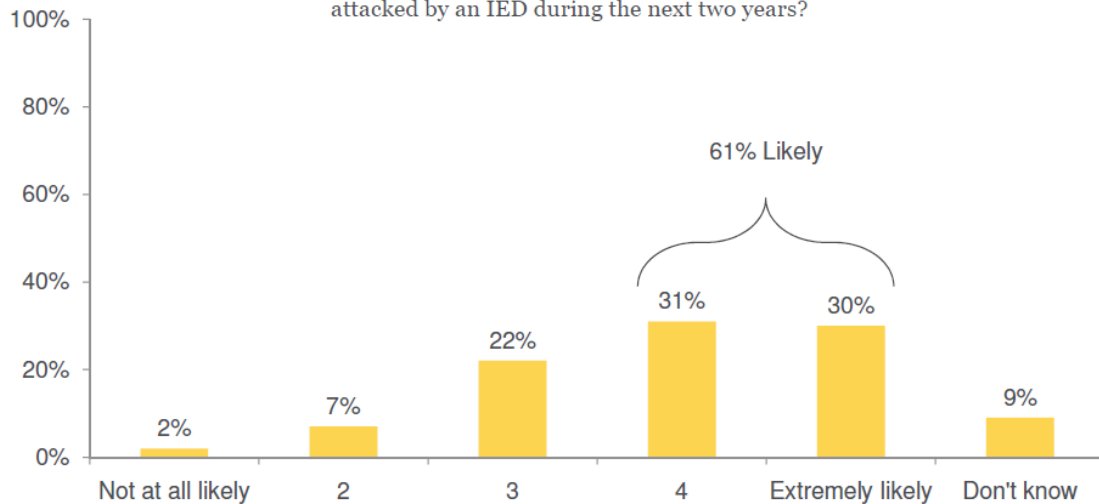
soil in the next two years; however, only 9 percent believed it would happen in their community. One of the greatest challenges to getting the public to prepare for any type of terrorist incident is finding ways to motivate a public who believes the threat is real, but does not believe it will impact them.⁸

Figure 3. Perception of Local Impact

Printed with permission from Gallup

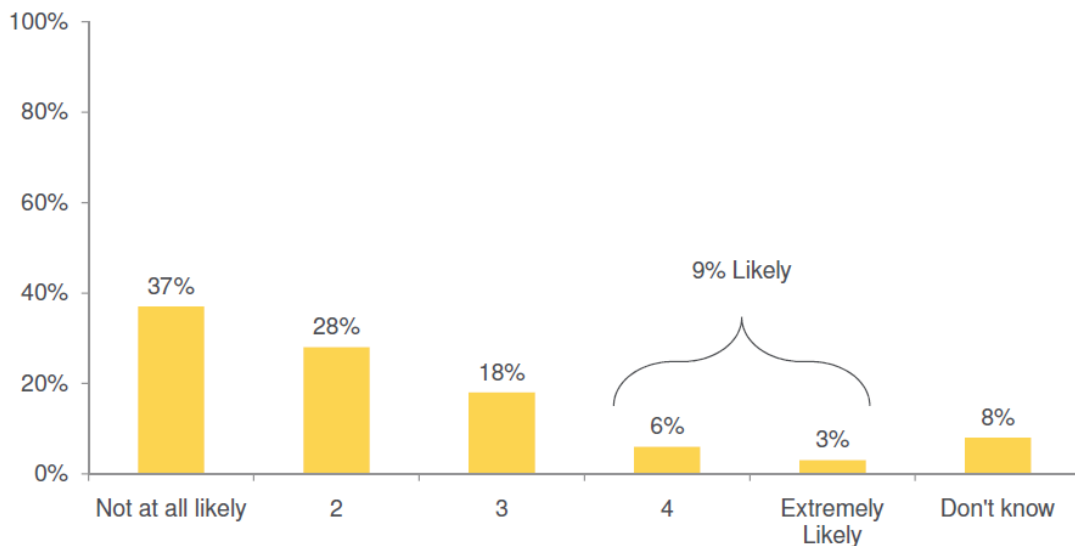
Six in 10 Americans Say it is Likely the U.S. Will Be Attacked by an IED in the Next Two Years

As you may know, an IED is a homemade explosive. They are a preferred weapon for terrorists, extremists, and criminals. Examples include, but are not limited to, the 1996 Centennial Park Olympics bombing in Atlanta, the 9/11, Pentagon, and World Trade Center attacks, and the 1995 Oklahoma City federal building bombing. In your opinion, how likely is the United States to be attacked by an IED during the next two years?



Likelihood of an Attack on Community Using IED

In your opinion, how likely is your community to be attacked by an IED during the next two years?



In addition, there is a legacy of public emergency preparedness campaigns, such as the Cold War's "duck and cover" and the more recent "plastic sheeting and duct tape," that leave the public confused or even skeptical of preparedness messages. Many people do not believe that

a nuclear detonation is survivable. This sense of futility, fatalism, and hopelessness severely impacts the public's desire and ability to absorb information and follow instructions.⁹ Many people do not own or have access to emergency radios, which may lead to problems communicating protective actions and safety information.

Opportunities to educate the public about radiation and IND preparedness do exist, including:

- Taking advantage of other pre-incident education campaigns, such as National Preparedness Month or FEMA's Radiological Emergency Preparedness (REP) Program educational campaign around nuclear power facilities.
- Thinking All-Hazards. The key protective action message 'Get inside, Stay inside, Stay tuned' applies to more than just nuclear detonations. This type of all-hazards messages can apply to any emergency situation where people need to get off the streets and listen for instructions before taking action. Response to a nuclear detonation has similarities to sheltering for tornadoes.
- Focusing on target audiences and community leaders, who are the people most likely to act on the information and influence those around them. Target audiences may include grade school students who can bring the information home to their families, religious leaders who can inform their congregations, business owners who can help encourage their employees to be prepared, and first responders who can educate their communities.

In conclusion, communications will be a driving factor in the response to a nuclear detonation. Planning and preparedness are essential for effective messaging and a resilient communications infrastructure in such an emergency.

Additional Communication Resources:

U.S. Environmental Protection Agency: *Communicating about Radiation Risks*.

<http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=500025HA.txt>

U.S. Department of Health and Human Services: *Tools for the Media and Public Health Communicators: Public Health Emergency Response: A Guide for Leaders and Responders and Communicating in the First Hours: Initial Communication With the Public During a Potential Terrorism Event*. <http://www.phe.gov/emergency/communication/Pages/default.aspx>

Centers for Disease Control and Prevention: *A Primer on Health Risk Communication*.

<http://www.atsdr.cdc.gov/risk/riskprimer/vision.html>

U.S. Department of Health and Human Services: *Nuclear Detonation Preparedness: Communicating in the Immediate Aftermath*.

<http://www.remm.nlm.gov/NuclearDetonationPreparedness.pdf>

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